

WELCOME

On behalf of the organizing committee, it is my great pleasure to welcome you to Conference on Mathematical Sciences and Development Dec. 22-24, 2018 at Department of Mathematics, IBS, Dr. Bhimrao Ambedkar University, Agra. The Conference will include many technical sessions on diverse topics of Mathematical Sciences which will disseminate the latest researches and findings to discuss with the researchers and academicians. For this conference research papers have been submitted by authors from the various parts of the country and abroad. This conference will provide a wide range of learning opportunities to participants through invited talks, technical sessions and poster presentations.

We feel honored and delighted to have renowned academicians and researchers as our keynote and invited speakers. Apart from the dissemination of knowledge and learning activities, the host city Agra is a historical place with its “Sulalhkul” legacy. There are many historical tourist attractions, in addition to the Taj Mahal, in and around Agra. Today’s Agra has become a premier educational hub of Uttar Pradesh. You can enjoy the historical monuments of Agra with wide range of learning opportunities during the conference. I hope you will have a pleasant time during your stay at Agra.

Once again, I extend my warm Welcome to you all in the Conference in the city of Taj Mahal.

(Sanjay Chaudhary)
Convener

About the Department

The Department of Mathematics in Agra University (renamed as Dr. Bhimrao Ambedkar University, in 1994) started in 1981 with one Professor and one Reader to run M.Phil. program. Later on M.Sc., MCA, Diploma and Certificate courses in Computer Science were introduced and the strength of the department rose to one Professor, two Readers, two Lectures and some contractual and guest faculty. At present the department is running M.Sc. and M.Phil. Courses in addition to Ph.D. program. The research areas in the department have been fluid mechanics, operation research, reliability theory, topology, analysis, bio mathematics, mathematical cryptography and fuzzy mathematics. The department has organized several workshops and conferences (including ORSI, IAPS, VPI and Ramanujan Mathematical Society etc). The Department in its existence of 37 years has produced more than 75 Ph.D. During this period the faculty members have published more than 400 research articles and completed more than a dozen research projects. The faculty members have also contributed by writing more than 20 books (including those for NCERT and UGC) and by Video lectures for UGC. During the last 10 years around 15 students have cleared NET/ GATE. The departmental library is equipped with around 3000 volumes with partial financial assistance from NBHM. Computer Lab of the department is equipped with 30 computers with MATLAB software. All the class rooms have become Smart Class Room with financial support under RUSA.

The following have headed the Department since its inception.

1. Prof. Har Swaroop Sharma (1981-86)
2. Prof. G.C. Sharma (1986-98)
3. Prof. Sunder Lal (1998-2008)
4. Prof. Rajiv K. Shrivastava (2008-2011)
5. Dr. Sanjay Chaudhary (2012-2015, 2018 till date)
6. Dr. Sanjeev Kumar (2015-2018)

(Sunder Lal)

Ex. Vice Chancellor

VBS Purvanchal University, Jaunpur

Conference on Mathematical Sciences and Development

About the Conference

In modern era, Mathematics and its sister subjects like statistics and computer science are playing a key role in progress and development of nations and societies. No branch of knowledge can claim to be divorced from mathematics. Subjects like languages, music, painting, history, sociology, geography, psychology, physical and chemical science, life and environmental science, earth, agriculture and medical sciences have advanced using mathematical sciences. As part of celebrations of Mathematics Day, and Ramanujan's birth anniversary the Department of Mathematics is organizing a three days (Dec. 22-24, 2018) conference. The purpose of the conference is to provide a platform for teachers and researchers who are involved in exploring and developing Mathematics and mathematical techniques for the development and progress of our nation.

This conference will include 02 Keynote Speakers (Prof. J.B. Shukla, IIT, Kanpur and Prof. V.D. Sharma, IIT, Mumbai) and around 15 Invited Speakers (Prof. R.C. Mittal, IIT Roorkee, Prof. S. Abbas, IIT Mandi, Prof. Manoj Kumar, HRI Allhabad, Prof. Vilas Kharat, Pune, Prof. D.S. Hooda, Rohtak, Prof. Rashmi Bhardwaj, Delhi, Prof. K. Jha, Kathmandu, Prof. Vijay Gupta and Prof. J. Jena, NSIT, Delhi, Prof. G.S. Khadekar, Nagpur, Prof. A.K. Shukla, NIT, Surat, Prof. Ram Naresh, HBTI Kanpur, Prof. Sudhanshu Agarwal, INSA, Delhi etc). More than 15 academicians from different parts of India are expected to participate in the Conference.

Hope the Conference will provide a platform for the researchers in Mathematics working for the betterment of the society.

Sanjeev Kumar
Organizing Secretary

AGRA- THE CENTRE OF CULTURE IN MUGHAL INDIA

Dr. AMIT MUKERJI

Ex. Head, Department of History, St. John's College, Agra.

The city of Agra located in the state of Uttar Pradesh is situated on the west of right bank of the river Yamuna and lies about 200 kilometer south-east of the national capital of Delhi. Agra came into prominence and rose in stature and grandeur after the establishment of the Mughal Empire. Under Akbar, Jahangir and partially Shah Jahan, it became known all over Asia and Europe as a centre of culture.

Babur (1526A.D.-1530A.D.), the first Mughal emperor was fond of gardens & laid out a few in Agra & its neighboring places. Perhaps the most beautiful among them was Bagh-Gul_Afsan on the bank of river Yamuna at Agra popularly known as Ram Bagh. The garden laid out in Persian style still has water channels, fountains, winding pathways, tanks, and cascades, open pavilions despite centuries of neglect. It would not be out of place to mention here that Babur taught to his successors the aestheticity of having well planned gardens around concrete edifices, However, Akbar (1556 A.D.-1605 A.D.) was the first Mughal Ruler who has the time and means to undertake construction on a large scale. His buildings are of red sand stone with little use of white marble. The stately and solidly built Red Fort at Agra is one of his creations. Many of the buildings in the Red Fort are inspired of the fusion of Hindu Muslim style of Architecture. The national style of architecture is in full play at the palace cum fort complex at Fethepur-Sikri. The buildings are a harmonious blending of Persian, Central Asian and Indian elements. The climax of Mughal Architecture is reached with the construction of Taj Mahal by Emperor Shahjahan (1628AD-1658AD) in the memory of his wife Mumtaz Mahal. The Taj Mahal is a lasting contribution of the Mughals to the cultural heritage of Agra, India and World.

Another branch of cultural life during the Mughal period, which has its roots at Agra, was music. No one before Akbar ever conceived the idea of bringing about a scientific fusion of the Hindu and Muslim styles music and singing. To the courts at Agra and Fatehpur-Sikri flocked musicians like Lal Kalwant, Baiju Bawara, Surdas, and the immortal Tansen. To Agra, therefore, belongs the credit of bringing about a synthesis of two diverse systems and this finally led to the evolution of national music.

**Conference on
Mathematical Sciencs & Development
Dec. 22-24, 2018, IBS, Khandari Campus, Agra**

22 Dec., 2018

Time	Event	Venue
9.00-10.00	Registration	JP Sabhagar
10.00-10.45	Inauguration	JP Sabhagar
10.45-11.15	High-Tea	JP Sabhagar
11.15-12.15	Key-Note Address-1	JP Sabhagar
12.15-1.15	Key-Note Address-2	JP Sabhagar
1.15-2.15	Lunch	Annapurna Café.
2.15-2.45	Invited Talk-1	Maths Seminar Hall
2.45-3.15	Invited Talk-2	Maths Seminar Hall
3.15-3.45	Invited Talk-3	Maths Seminar Hall
3.45-4.00	Tea	Gallary
4.00-5.00	Paper Presentation-1	Maths Seminar Hall
4.00-5.00	Paper Presentation-2	Maths Room No.-1

23 Dec., 2018

10.00-10.30	Invited Talk-4	Maths Seminar Hall
10.30-11.00	Invited Talk-5	Maths Seminar Hall
11.00-11.15	Tea	
11.15-11.45	Invited Talk-6	Maths Seminar Hall
11.15-11.45	Invited Talk-7	Maths Room No.-1
11.45-12.15	Invited Talk-8	Maths Seminar Hall
11.15-11.45	Invited Talk-9	Maths Room No.-1
11.15-11.45	Invited Talk-10	Maths Seminar Hall
12.15-01.15	Invited Talk-11	Maths Room No.-1
1.15-2.15	Lunch	Annapurna Café.
2.15-3.45	Paper Presentation-3	Maths Seminar Hall
2.15-3.45	Paper Presentation-4	Maths Room No.-1
3.45-4.00	Tea	Gallary
4.00-5.00	Poster Presentation-1	Gallary

24 Dec., 2018

10.00-10.30	Invited Talk-12	Maths Seminar Hall
10.30-11.00	Invited Talk-13	Maths Seminar Hall
11.00-11.15	Tea	Gallary
11.15-01.15	Paper Presentation-5	Maths Seminar Hall
11.15-01.15	Paper Presentation-6	Maths Room No.-1
1.15-2.15	Lunch	Annapurna Café.
3.15-3.45	Valedictory Function	Maths Seminar Hall
3.45 onward	Excursion (Optional)	Taj Mahal

MATHEMATICAL SCIENCES AND DEVELOPMENT

IL-MSD-01 : How to Increase the Carrying Capacity of the Earth : Some Mathematical Models

J. B. Shukla

*President, Indian Academy for Mathematical Modeling and Simulation Chairman,
Think Tank, Innovative Internet University for Research, Kanpur
Former Professor, Head and Dean IIT Kanpur*

It is well known that the carrying capacity of our planet earth is limited. By the year 2050, human population would increase to about 12 Billion. The Earth resources has to cater to this population for food, housing, health, education, etc. With the use of new technology, the earth carrying capacity has to increase in order to sustain this population under the stresses of global warming and climate change, melting of glaciers at the poles and increase in the sea level, immigration of coastal population, environmental pollution, resource depletion, loss of wild life diversity, depletion of under ground water table, decrease in agricultural production, urbanization, terrorism, biological and chemical warfares, etc.

In this lecture, some ideas will be presented for increasing the earth's carrying capacity and the corresponding mathematical models will be proposed for this purpose.

IL-MSD-02 : Nonlinear Conservation Laws, their Asymptotic Forms and Weak Solutions

Vishnu Dutt Sharma, FNASc, FNA

*Department of Mathematics, Indian Institute of Technology, Bombay Powai,
Mumbai-400076*

Nonlinear PDEs, whose solutions represent wave motion, are the main focus of this lecture. Particular attention is focused on small amplitude disturbances including weak shocks and their asymptotic decay laws. The transport equations, exhibiting both quadratic and cubic nonlinearities, leading to shocks are analysed. Riemann problem,

with a non-convex flux, poses certain open problems that arise in situations such as suspension of particles in fluids, nonlinear MHD, and in oil reservoir simulations in the sense that we need more general admissibility conditions.

IL-MSD-03 : Numerical Solutions of Some Non-linear Evolutionary Equations By B-Splines

R. C. Mittal

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Sector 62, NOIDA (U. P.)*

When we model mathematically a real life problem we get a differential equation. Invariably, this is a non-linear time depended partial differential equation whose exact solution is very difficult to obtain. Therefore, one has to resort to some approximate methods. In the present talk, a B Spline based method is discussed to solve such non-linear PDE. The results for some highly nonlinear problems are presented. The utility and applicability of the method is discussed.

IL-MSD-04 : Applications of Asymptotic Expansions in the Study of Nonlinear Waves

J. Jena

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Asymptotic expansion describes the asymptotic behaviour of a function in terms of a sequence of gauge functions. The Taylor's series expansion is the well known convergent series used to gather the information about the neighbouring position; whereas an asymptotic series need not be convergent, and a convergent series need not be asymptotic. The method of matched asymptotic expansions is a common approach to find an accurate approximation to the solution to an equation or a system of equations. It involves finding several different approximate solutions, each of which is valid for part of the range of the independent variable, and then combining these different solutions together to give a single approximate solution that is valid for the whole range of values of the independent variable.

The difference between the methods such as Taylor's series expansion, the perturbation method and the asymptotic expansions and their uses will be discussed. The applications of asymptotic expansion and matched asymptotic expansion for studying far field behaviour of waves in relaxing gas, relaxing gas with dust particles, non ideal relaxing gas and transient pinched plasma will also be discussed.

IL-MSD-05 : Approximation for Linear Positive Operators

Vijay Gupta

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Approximation Theory concerning linear operators is an active area of research amongst researchers in several decades. Many new methods and techniques have been proposed and the convergence behaviour of linear positive operators have been discussed by researcher. In the present talk, we discuss few approximation methods which include the approximation results available in the literature in the last few decades. We also, discuss here the ap-approximation of quantum, post-quantum calculus and the operators preserving different test functions. In the end we provide some results on the difference estimates of different operators.

IL-MSD-06 : Redundancy Allocation in Complex Systems : A 3-Neighborhood Heuristic approach

Sudhanshu Aggarwal

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New Delhi-110002*

Technological developments and needs of modern society are racing against each other. Industries are trying to introduce more and more automation in their industrial processes in order to meet the ever-increasing demands of society. Therefore, systems have become more complex. The improvement in the efficiency of complex systems has attracted the attention of researchers as well as reliability engineers.

This study deals with the problem of solving constrained redundancy optimization in complex systems. A comprehensive literature survey in the area of Redundancy optimization is provided based on several heuristic and Meta-heuristic algorithms. Meta-heuristics counteract the disadvantages of the heuristic methods by generating multiple heuristic runs. Heuristic algorithm is used to determine a set of good quality solutions.

An efficient heuristic algorithm based on the 3-neighborhood approach is presented. In this talk, search is made from sides of both feasible and infeasible regions to find near-optimal solutions. In general, the proposed heuristic is applicable to any coherent system with no restrictions on constraint functions. The proposed algorithm has been tested on complex system structures which have been widely used. The results show that this 3-neighborhood approach not only can

obtain various known solutions but also is computationally efficient for various complex systems. The utilization of 3-neighborhood strategy seems to be encouraging as it efficiently enforces the convergence to a near-optimal solution; indeed, it attains quality solutions in less computational time in comparison to other existing heuristic algorithms.

IL-MSD-07 : Chaotic Simulation of Ferric Oxide (Fe_3O_4) Nanoparticles

Rashmi Bhardwaj*

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The modelling of fluid dynamics of the ferro-nano-fluid flow with magnetite (Fe_3O_4) nanoparticles through blood vessels along with cholesterol decomposition in rectangular cavity system for magnetic and temperature variability is discussed. Using Routh Hurwitz Criterion, fixed points are calculated. The conditions for stable, critical and chaotic orbits are observed for non-uniform deposition of cholesterol. Small Alignment Index (SALI), Fast Lyapunov Indicator (FLI) and Dynamic Lyapunov Indicator (DLI) simulate the ordered and chaotic orbits of the dynamical system. Lyapunov Exponents and Bifurcation analysis is discussed for variation in Hartman number (Ha) and Reynold number (Ra). Entropy measures the randomness in the system. It is observed that the state of chaos starts from $Ra = 26.2$ which indicates that only at extremely higher temperature the rectangular cavity gets chaotic which proves the fact that when the blood vessel of a patient has non-uniform deposition even then some regular flow is still viable. It is concluded that in case of non-uniform cholesterol deposition the value of Rayleigh number at which chaos begins is quite high, thus, patient has more chance to survive as disorder occurs for extreme conditions and there exist narrow passages which provide flow.

IL-MSD-08 : On Some Fixed Point Results in Generalized Metric Space

Kanhaiya Jha

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Abstract: Inspired from the impact and utility of metric space, several generalizations of this notion have been attempted such as pseudo metric space, semi-metric space, fuzzy metric space, probabilistic metric (Menger) space, G-metric space, cone metric space.

The fixed point theory as a part of non-linear analysis is a study of function equation in metric or non-metric setting. It provides necessary tools for the existence of theorems in non-linear problems. The classical Banach contraction principle in metric space is one of the fundamental results in metric space with wide applications. This principle has also a big impact on establishing fixed point results for non-expansive mappings in Banach and Hilbert spaces.

The main purpose of this presentation is to discuss some developments of classical metric subspaces in functional analysis with applications to other disciplines.

IL-MSD-09 : Fuzzy Sets and Fuzzy Logic Application in Gynaecology

Vilas

The core part of the study is powered by the practical utility of Prof. Lotfi Zadeh's Fuzzy Set Theory and Fuzzy Logic. Application of fuzzy logic based Similarity measures can be an effective combination to confirm the classification result.

The basis of fuzzy logic based inference systems strongly dependent on the perception of the domain experts. The authors firmly believe that these similarities should be first evaluated before using the knowledgebase of the experts in decision analysis. In this regard, Fuzzy similarity measures based methods can be a preferred in expert's classification.

There is increasing evidence that the use of computer aided clinical decision support to manage medical knowledge results in better healthcare processes and patient outcomes. We believe that the three stage approach detailed in the system is a better proposition in medical diagnosis system especially in the field of gynaecology.

With this assumption, the fuzzy set theory and fuzzy logic can be applied to real world problem of Medical Decision System in general and Gynecology in particular.

The success rate of the system is 95.13 % for the collected 226 patients which sound pretty good for the Medical Decision Support System.

IL-MSD-10 : Fuzzy Soft Set Theory with Applications in Dimension Reduction and Medical Diagnosis

D. S. Hooda

(Former PVC, Kurukshetra University), Honorary Professor in Mathematics, GJUST, Hisar-125001(Haryana) & Adviser(R) to ABV Hindi University, Bhopal

IL-MSD-11 : Laguerre Polynomials and its Applications in Integral Transforms

Ajay Shukla

Department of Applied Mathematics & Humanities, S.V.National Institute of Technology, Surat-395007, (Gujarat)

Laguerre polynomials occur in many fields of research in science, Engineering and Numerical Mathematics such as, in Quantum Mechanics, Communication theory and Numerical Inverse Laplace Transform. An attempt is made to discuss on Recent Development in Integral Transforms by using in Laguerre polynomial as a kernel.

IL-MSD-12 : Groups with Large Central Quotient

Manoj Kumar Yadav

HRI, Allahabad (UP)

Starting with some historical notes on the connection of the orders of central quotient and commutator subgroup of a group, it is planned to present a classification of all finite groups admitting maximal central quotient in terms of the order of its commutator subgroup.

IL-MSD-13 : Relativity and Wormhole

G S Khadekar

Professor Department of Mathematics and Dean Faculty of Science and Technology, RTM Nagpur University, Nagpur

In this talk we describes an elementary relativistic concepts underlie the wormhole visualizations seen in the universe. A wormhole is a theoretical passage through space-time that could create shortcuts for long journeys across the universe. It can be visualized as a tunnel with two ends, each at separate points in space-time. Wormholes are predicted by Einstein general theory of relativity, but whether wormholes actually exist remains to be seen.

IL-MSD-14 : Dynamic Equations on Time Scale

Syed Abbas

Associate Professor and Chairperson SBS, IIT Mandi

Time scale is any closed subset of real line. It unifies the discrete and continuous calculus upto some extent. Dynamic equation is differential equation defines over time scale. In this talk, we explore this concept along with some qualitative analysis.

MSD-01 : The Study of Excess Molar Volume and Deviation in Viscosity of Binary Mixture of Propyl Amine in Benzene and Toluene at 301k Ultrasonically

R. C. Verma¹, Ruman Singh² and H. S. Mahor³

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Densities, ultrasonic velocities and viscosities of Propyl amine with benzene and toluene have been measured over entire range of composition at 301K and atmospheric pressure. The computed acoustic and thermodynamic properties of Propyl amine in benzene and toluene will give excess values of isentropic compressibility, molar volume and viscosity. The excess values will decide the nature and extent of molecular interaction of propyl amine with benzene and toluene at 301K.

MSD-02 : A Fuzzy Inventory Model with Time Dependent Demand under Permissible Delay and Inflationary Environment

Yogendra Kumar Rajoria*, Ravendra Singh and Priti

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The main purpose of this research is to establish models for perishable items whose deterioration starts immediately as soon as you store the items taking account of time value of money, inflation and permissible delay in payment. The model focuses on commodities having quadratic demand with trade credit policies. The deteriorating cost, fuzzifying the rate of interest charges, and the rate of interest earned are assumed as a trapezoidal fuzzy numbers. Optimal solution for the model is derived and the trade credits on the optimal replenishment policy are studied with the help of numerical example.

MSD-03 : A Study on Peristaltic Flow of Micropolar Fluids : An Application to Sliding Hiatus Hernia

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Abstract In this paper, we presented a mathematical formulation deals with the flow of micropolar fluid in a circular cylindrical tube of non-uniform cross-sectional area induced by peristaltic waves of

increasing amplitude. This is an intended act to model the swallowing of various types of foods in the oesophagus which suffers from a hiatus hernia. Due to sliding hiatus hernia, the cross section of the lower oesophagus does not remain uniform. The impact of bulging, which is formed by various combinations of divergence and convergence, has been examined. The effects of dilating amplitude, a slope of the tube wall, the coupling number, and micro-polar parameter, have been investigated.

MSD-04 : Mathematician's Approach to Teaching

Dharmendra Kumar Yadav

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The aim of the article is to discuss an approach to teaching that generally a mathematics teacher follows in higher educational institutions of graduate and postgraduate students and of research scholars. It has been observed that all subjects including mathematics follow the same roots to develop. They all consist of three parts: assumptions, properties and applications, which brought them under the same umbrella of definition. In teaching too they follow the same steps to be explained to the students in order. Although there is no single best method available, an attempt has been made to propound one of the best idealistic method and a realistic inductive method. The article concluded with a short note that realistic inductive method is sufficient for graduate and postgraduate students while idealistic method is useful for research oriented students, followed by the scope of further research in open problem section.

MSD-05 : Dynamic Pricing Policy with Pricing Sensitive Demand

Uttam Kumar Khedlekar

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With effect of pricing strategy considered, an order level inventory model is proposed. The reducing of price strategy not only maximizes the retailer's profit but also improves the service towards the product. In diminishing market retailer could reduce the selling price and generate the excess demand to increase more revenue. A numerical example is demonstrated and which showed that in every business setup, there will be an optimal number of price settings obtained. It is found that the price reducing strategy outperform the static pricing policy.

MSD-06 : Lagrangian Mechanical Systems with Four Almost Complex Structures on Symplectic Geometry

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In this paper we presented an analysis of Lagrange formulas. with four Almost Complex Structures we have reached important results in differential geometry that can be applied in theoretical physics.

MSD-07 : Mathematical Modeling of Type -2 Diabetes Mellitus as a Risk Factor for Pancreatic Cancer

Richa Gupta¹, Deepak Kumar¹ and Sanjeev Kumar²

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²Department of Mathematics, Dr. B R Ambedkar University, Agra

In the present work, we propose a mathematical model for the risk of pancreatic cancer to a patient having type-2 diabetes mellitus for a long time. In type-2 diabetes, the body fails to respond to the insulin produced by the body itself. A system of ordinary differential equations is used for describing these changes. This model includes the concentration of Glucose, Insulin and Pancreatic cell concentration. In conclusion, the possibility of having pancreatic cancer is more in the people having long-standing (over 5 years) type-2 diabetes than in people who do not have diabetes.

MSD-08 : On Local Qausi-convexity

Pranav Sharma and Sanjay Mishra

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We introduce the notation of local quasi-convexity in convergence groups and obtain the characterization of reexive compact convergence groups.

MSD-09 : Elastodynamical Response of Inclined Forces in Fractional Micropolar Thermoelastic Mass Diffusion Medium

Arvind Kumar¹ and Rakesh Kumar²

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The present investigation deals with the deformation in micropolar fractional thermoelastic mass diffusion medium due to inclined load

subjected to thermal laser pulse. Normal mode analysis technique is used to solve the problem. The inclined forces are supposed to be a linear combination of a normal load and a tangential load. The exact derived expressions of normal stress, tangential stress, couple stress, temperature distribution and mass concentration are obtained. A computer program has been developed to derive the physical quantities numerically. The variation of normal stress, tangential stress, coupled stress; temperature change and mass concentration are depicted graphically to show the effect of relaxation times and mass concentration. Some particular cases of interest are deduced from the present investigation.

Micropolar theory was developed to overcome the shortcomings of the classical theory of elasticity by considering the granular structure of the material of the medium. The micropolar theory of elasticity is applied to materials for problems where the classical theory of elasticity fails owing to the microstructure of the material. The linear theory of micropolar elasticity was developed by Eringen. Under this theory, solids can undergo macro deformations and micro rotations. Also they can support couple stresses in addition to force stresses. Nowacki extended the micropolar theory of elasticity to include the thermal effects.

Diffusion is defined as the spontaneous movement of the particles from a high concentration region to the low-concentration region, and it occurs in response to a concentration gradient expresses as the change in the concentration due to change in position. Thermal diffusion utilizes the transfer of heat across a thin liquid or gas to accomplish isotope separation. Today, thermal diffusion remains a practical process to separate isotopes of noble gases e.g., Xenon and other light isotopes e.g., Carbon for research purposes. In most of the applications, the concentration is calculated using Fick's law. This is a simple law which does not take into consideration the mutual interaction between the introduced substance and the medium into which it is introduced or the effect of temperature of this interaction. However, there is a certain degree of coupling with temperature and temperature gradients as temperature speeds up the diffusion process. The thermodiffusion in elastic solids is due to coupling of fields of temperature, mass diffusion process. The thermodiffusion in elastic solids is due to coupling of fields of temperature, mass diffusion and that of strain in addition to heat and mass exchange with the environment.

MSD-10 : Unsteady MHD Flow of Radiating Casson Fluid Through a Permeable Channel with Slip, Buoyancy Force and Heat Source

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Analytical investigation is performed into an unsteady MHD mixed convective Casson fluid flow and heat transfer characteristics with thermal radiation, wall slip, heat source and buoyancy force in a permeable vertical channel. The fluid is injected into the channel at the left wall and sucked out at right wall. The governing momentum and energy balance equations are obtained and tackled analytically. The effects of various thermophysical parameters on the velocity and temperature profiles as well as skin friction and Nusselt number are graphically and discussed qualitatively. The results show that a temporal decline in the pressure gradient causes both the fluid velocity and temperature to decrease. Moreover, the enhancement in heat transfer due to wall injection/suction also causes the skin friction to decrease.

MSD-11 : Generalized Semi Generalized -closed Sets In Intuitionistic Fuzzy Topological Spaces

Jyoti Pandey Bajpai¹ and S.S. Thakur²

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In 1970, Levine introduced the concept of generalized closed sets in general topology. He observed that the family of all closed sets in a topological space X is a subfamily of the family of all generalized closed sets. He generalized some of well-known results of general topology replacing closed set by generalized closed sets, for instance, generalized closed subset of a compact space is compact and generalized closed subspace of a normal space is normal. Many authors utilized g -closed sets for the generalization of various topological concepts in general topology. The concept of intuitionistic fuzzy sets was introduced by Atanassov in 1983, as a generalization of fuzzy sets. In 1997 Coker introduced the concept of intuitionistic fuzzy topological spaces. In 2008, Thakur and Chaturvedi introduced the notion of intuitionistic fuzzy generalized closed set in intuitionistic fuzzy topological space.

After that different mathematicians worked and studied in different forms of intuitionistic fuzzy g-closed set and related topological properties. The aim of this paper is to introduce the new class of intuitionistic fuzzy closed sets called intuitionistic fuzzy generalized semi generalized closed set (briefly intuitionistic fuzzy gsg- closed sets) in intuitionistic fuzzy topological space. The class of all intuitionistic fuzzy gsg—closed sets lies between the class of all intuitionistic fuzzy closed sets and class of all intuitionistic fuzzy g-closed sets. We also introduce the concepts of intuitionistic fuzzy gsg— open sets in intuitionistic fuzzy topological spaces. As an application of this set we introduce intuitionistic fuzzy gsg- $T_{1/2}$ -space.

MSD-12 : Two Cylindrical Shell Discontinuities In A Thick Plate Of Infinite Radius

Mohammad Salim Ahamad

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In this paper I have analysed two shell discontinuities in a plate of thickness $2h$ and radius infinite. The closed form and stress intensity factor are obtained by using Hankel and Fourier transforms. Point body forces are also discussed as a special case. Normal stress, graphical crack shape and solution of Fredholm integral equation are obtained.

MSD-13 : Correction of 2-Solid Burst Error of Length (b_1, b_2)

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In most of the storage systems, the occurrence of errors in adjacent bit positions is more likely than the errors that take place in random positions. This fact makes the adjacent errors more significant over the random errors. Such a scenario is dealt with the theory of bursts. Sometimes a set of burst(s) repeat itself to yield another kind of error patterns. This paper investigates on 2-repeated solid burst error correcting linear codes over $GF(q)$ to determine a new class of error correcting linear code. We will show that such a code is capable of correcting each error that results from the occurrence of two solid bursts of lengths b_1 and b_2 in no specific order. This error will be quoted as 2-solid burst error of length (b_1, b_2) throughout this presentation. Our work presents a robust mathematical framework to construct an (n, k) linear code over $GF(q)$ that corrects all such errors in particular. The necessary and sufficient conditions for the existence of such a code have been obtained.

MSD-14 : Radiation and MHD Flow Through Porous Medium Past A Semifinite Moving Vertical Plate with Viscous Dissipation

Neeraj

In this section, we investigate the radiation effects on unsteady magneto hydrodynamic flow of a chemically reacting fluid through porous medium past a semi-infinite vertical plate with viscous dissipation. The method of solution can be applied for small perturbation approximation. Numerical results for the velocity, the temperature and the concentration are shown graphically. The expressions for the skin-friction, Nusselt number and Sherwood number are obtained.

MSD-15 : Dynamic Programming Solving Inventory Level of Control Wafers for Each Grade

Saloni Srivatava and Vipin Solanki

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It is always found that inventory problem has a great role in the pasture of production and operations management. In this chapter we study the control wafers inventory problem in wafer fabrication factories. Pulling control production environment examined by a single-period, multi-product inventory problem with reentry and downward substitution. Firstly, the control wafers inventory problem is constructed as a network and later, dynamic programming is applied. Our objective is to set an acceptable inventory level to minimize the total cost of control wafers through reducing various types of costs without halting production throughput. A numerical example is given to illustrate the practicality of the model. It is found that for determining the inventory level of control wafers for each grade, the proposed model is an effective tool.

MSD-16 : The Quantum Entanglement between Expanding and Contracting Branches of the Universe

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First, by using cylindrically symmetric model, the quantum state for cyclic Universe is studied. It is shown that the ground state for oscillating cylindrical Universe is a maximally entangled with two-

mode squeezed states on expanding and contracting Hilbert spaces of Universe. Also, the production cross section for each Universe state is obtained. It is observed that the probability for producing each state in cyclic Universe depends on different oscillating frequencies of Universe in space-time directions. Finally, the effect of cyclic model of Universe on Dark energy cross section is considered. To calculate the production cross section for Dark energy, the production cross section for each Universe state is multiplied by thermal distribution of Dark energy. It is found that in each Universe state, different amount of Dark energy is produced.

MSD-17 : Various Ring Extensions

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In the talk I will discuss various ring extensions, like minimal ring extensions, Lambda-extensions of rings, Delta-extensions of rings etc.

MSD-18 : Qualitative Analysis of a Predator-Prey Model in the Presence of Additional Food and Constant-Yield Predator Harvesting

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In the present article, a predator-prey model with additional food and constant yield harvesting rate to predator is considered. It is assumed that additional food is not dynamic in nature, but available at a specific constant level either by the nature or by an external agency. The local stability of the equilibrium points of the model has been investigated. Further, it is shown that the model undergoes to different kind of bifurcations including Hopf bifurcation, Transcritical bifurcation, Saddle-Node bifurcation and Bogdanov-Takens bifurcation. The numerical simulation has been done which is in good agreement to the analytical findings.

MSD-19 : Industrial Internet of Things : Security Challenges and Solutions

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Recently, the innovations in wireless communications have

developed one of the most important paradigms of modern era, called Internet of Things (IoT). In IoT, several smart devices such as- sensors, mobile phones, smart machines, etc. are connected to each other through a cloud. The usage of these smart devices has inspired the idea of smart industries and the paradigm is called Industrial Internet of Things (IIoT). In IIoT, all the processes (machine based or human based) are operated by using smart devices and therefore, the security is an important factor. The authentication of the sources and the data is one of the main security goals. In this article, we review the detailed architecture of IIoT, security requirements of IIoT, solutions and constrained. The described solutions can be considered as a base to model ideal network architecture.

MSD-20 : Some New Generating Functions for One Probability Distribution

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In This Paper We Have Obtained Some New Generating Functions For Measure Of Entropy. The Relative Information Measures Whose Derivative At 1 And 0 Includes Several Well-Known Results, We Have Also Discussed Its Particular And Limiting Cases.

MSD-21 : Issues in Spatio-Temporal Indexing Methods

Meenakshi and Sumeet Gill

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A big amount of data related to spatial and temporal attributes of any object has resulted in an extensive research work and different types of spatio-temporal applications. This further pushed the interest and urgency of different techniques to handle spatio-temporal data. Over last few years, a large number of researchers have designed, proposed and evaluated a big number of indexes to support spatial, temporal and spatio-temporal data. But, there is no clearance related to selection of particular index for particular requirement of any application. Also, as spatiotemporal indexes relate to different domains, their inter-domain applicability is under question. In this paper, we will discuss different spatio-temporal indexes along with their issues and challenges. Also, we will throw some light on different domains and applications where these methods can be applied.

MSD-22 : Unsteady Couette Flow for Visco-Elastic Magneto Hydrodynamic Fluid with Hall Current

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In this paper, we have studied an investigation of an unsteady Couette flow for visco-elastic MHD fluid through porous medium with hall current has been dealt with by the technique of Laplace transform. We have obtained the exact expressions for skin-friction and the velocity distribution. The effects of elasticity (?), magnetic field (M), hall current parameter (m) and time (t) have been graphically represented.

MSD-23 : Mathematical Modeling of Blood Flow through an Inclined Axially Non-Symmetric Stenosed Catheterized Artery with Body Acceleration

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In this paper, a mathematical model has been developed to study the pulsatile flow of blood through an axially non-symmetric but radially symmetric stenosed inclined catheterized artery with periodic body acceleration and slip at wall. In our study, blood is assumed to be Newtonian fluid, since in general stenosis is developed in large arteries. Here, perturbation as well as analytical methods are used to finding the solutions of non-linear partial differential equations of various flow variables. In this work, various interesting results are obtained regarding velocity field, volumetric flow rate, wall shear stress and effective viscosity of blood during catheterization in inclined arteries. The variation of flow variables with different parameters are obtained graphically and discussed elaborately. Here, it has been observed that velocity increases with increase of inclination, time, body acceleration to a certain limit and then decreases. Also, wall shear stress increases with increase of inclination but decrease with increase of body acceleration and slip velocity. Volumetric flow rate increases with mild increase of body acceleration and Effective viscosity also increase with increase of stenosis shape parameter.

MSD-24 : A Brief History of Indian Mathematics

Parvesh Ranga

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Indian Mathematics emerged in the Indian subcontinent from 1200 BC until the end of the 18th century. All mathematical works were orally transmitted until approximately 500 BC; thereafter, they were transmitted both orally and in manuscript form. The oldest extant mathematical document produced on the Indian subcontinent is the Bakhshali Manuscript. The decimal number system in use today was first recorded in Indian mathematics. Indian mathematicians made early contributions to the study of the concept of zero as a number, negative numbers, arithmetic and algebra. In addition, trigonometry was further advanced in India and in particular, the modern definitions of sine and cosine were developed here. These mathematical concepts were transmitted to the Middle East, China, and Europe and led to further developments that now form the foundations of many areas of mathematics.

For the sake of convenience, we divide this paper into six sections. Section 1 deals with the Abstract. In section 2, we will discuss some ongoing mathematical activities during Indus Valley Civilization under the topic Prehistory. Section 3 describes the mathematical activities in Vedic age. In section 4, In the classical period of Indian mathematics (400 AD to 1600 AD), we will discuss the contributions made by the famous mathematicians like Aryabhata I, Brahmagupta, Bhaskara II and Madhava of Sangamagrama. Section 5 describes how Indian numerals and decimal number system became famous in whole world. In last section, there are some names of foreign scholars who spread the Indian mathematical knowledge to the whole world.

MSD-25 : A Certain Class of Five Integral Equations Involving I-functions

Mukti

In the present paper, the solution of five integral equations involving the I-functions as kernels is discussed. The given five integral equation have been transformed into five other integral equations having the common kernel by the application of fractional Erdelyi-Kober operators and hence five integral equations reduced to single integral equation in compact form which is solved by the theorem of Mellin transform and Parseval theorem. A particular case of the paper in which five integral equations involving H-functions are also solved.

MSD-26 : A New Method of Digital Image Encryption using Graph Theory

Anand Ballabh Joshi and Dhanesh Kumar

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In this research paper we proposed a new method of digital image encryption based on graph theory. In the proposed method digital image is supposed to be a graph $G(V, E)$, where the set of vertices V of the graph is considered as the pixels values of the digital image and the set E of weighted edges is considered as the distance between the two pixels. And the distance between any two pixels is considered as the difference between the pixels values of the vertices. We defined a weighted adjacency matrix to represent this finite weighted graph. A minimal spanning tree (MST) of this graph is constructed. And then a highly secure encryption method is proposed using the graph $G(V, E)$. Our proposed algorithm is robust against brute force attack, occlusion attack and statistical attack. Statistical analysis like histogram analysis, correlation analysis and entropy analysis are given to show the robustness of proposed algorithm.

MSD-27 : Effect of Various Production & Reproduction Traits on Milk Yield and Prediction of Lifetime Milk Production in Crossbred Cattle

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Livestock production is an important source of income for the rural poor in India where majority of the livestock is in the hands of small and marginal farmers and landless labourers. The overall productivity of dairy animals depends upon their lifetime performance rather than on a single lactation performance. Ultimate aim of the dairy producers is to maximize milk production and profitability, therefore lifetime milk production is an important economic trait. The reproductive performance of the herd or animal is a key indicator of sustainability of a dairy farming system. However, assessment of productive and reproductive performance depends on composite parameters to assess overall performance evaluation. The significant parameters that find out cattle reproductive and productive efficiency are age at first service, age at first calving, birth weight, total milk

yield, average milk yield per day, calving to first service interval and calving interval. The present study was conducted on G.B. Pant University of Agriculture and Technology, Pantnagar, based on the statistical analysis of data related to performance traits of crossbred cattle. Data pertaining to 326 crossbred cattle for a period of 16 years (2001 to 2016) were used for the present study. The data for the Age at First Calving (AFC), First Service Period (FSP), First Gestation Period (FGP), First Lactation Period (FLP), First Milk Yield (FLMY), First Dry Period (FDP), First Calving Interval (FCI), Second Lactation Milk Yield (SLMY), Third Lactation Milk Yield (TLMY) and Lifetime Milk Yield (LMY) were obtained from history sheets of animals maintained at Instructional Dairy Farm (IDF), G.B. Pant University of Agriculture and Technology, Pantnagar. On the basis of data under study Spearman's Rank correlation coefficients among production traits and reproduction traits of crossbred cattle were calculated and the correlation coefficients between LMY & AFC, LMY & FSP, LMY & FGP, LMY & FLP, LMY & FLMY, LMY & FDP, LMY & FCI, LMY & SLMY, and LMY & TLMY were found -0.083, 0.155, 0.029, 0.773, 0.964, -0.277, 0.152, 0.982 and 0.975 respectively. And To estimate Lifetime Milk Yield of crossbred cattle, several MLR models were developed using more than one predictors out of 9 predictors (AFC, FLP, FCI, FGP, FDP, FLMY, SLMY, TLMY and FSP). However, 17 MLR models are included in our study for which R² value were more than 50%. On the basis of maximum value of R² (0.992") and minimum value of RMSE (143.0), MLR model was found to be best model to estimate LMY of crossbred cattle as given below:

$$\text{LMY} = 1039.306 + 1.389(\text{FSP}) + 0.615(\text{FGP}) + 1.035(\text{FLMY}) - 1.438(\text{FDP}) - 0.246(\text{FCI}) + 1.806(\text{SLMY}) \quad (\text{R}^2 = 0.992)$$

It was concluded that, FLP, FSP, FCI, FLMY, SLMY and TLMY showed a significant positive monotonic correlation with LMY i.e. on an average as the FLP, FSP, FCI, FLMY, SLMY and TLMY of crossbred cattle increases, their LMY also increases. And FSP, FGP, FDP, FCI, FLMY and SLMY are the best predictors to estimate LMY of crossbred cattle, as they jointly explained 99.2% variability in LMY.

MSD-28 : A Mathematical Model to Solve the Telegraph Equation by Homotopy Perturbation Method

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In this paper, Homotopy Perturbation Method (HPM) is introduced

for obtaining solutions of linear and non-linear telegraph equations. Using homotopy perturbation method, it is possible to find the exact solution or a closed form approximate solution to a problem reveals significant points. The capability and reliability of the method, several examples are provided and results compared with to solve the problem by Adomian's decomposition and Variational iteration method. MATLAB used to calculate the series obtained from HPM.

MSD-29 : Synthesis, Characterization and Photoelectro-Chemical Study of Silicon Doped Nanostructured Hematite Thin Films

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Nanostructured hematite ($\alpha\text{-Fe}_2\text{O}_3$) thin films were prepared by spray pyrolysis method. Structural, optical, electrical and photoelectrochemical properties were studied using XRD, SEM, UV-Vis absorption spectroscopy and J-V characteristics. The XRD pattern obtained for all the doped/undoped iron oxide thin films confirms the existence of $\alpha\text{-Fe}_2\text{O}_3$ (hematite) phase of iron oxide. Absorption spectra showed the strong absorption in visible region with absorption band edge $\sim 2.1\text{eV}$. The Si doping improved the photoresponse as compared to undoped samples. Maximum photocurrent of $\sim 680\mu\text{A}/\text{cm}^2$ at 0.7 V/SCE was observed for 0.002 M Si doping which is approximately three times better than undoped sample. The enhancement in the photocurrent have been attributed by the substitution of Fe^{3+} by Si^{4+} in the $\alpha\text{-Fe}_2\text{O}_3$ lattice, improved donor density and higher value of flat band potential.

MSD-30 : Reliability Analysis of Different Series Systems Built up of Different Devices

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In this paper, reliability analysis, mean time between failure (MTBF) and performance distribution of three different systems, which are built of two types of devices (i.e. unit or system). In each system,

the devices are connected in series. The examples of first type device are fluid flow valve and an electronic diode and the examples of second type device are instrumental panel, a system, etc.

The two types of devices are built up as the three different systems. The first system consists of both types of three-state devices, where the second type of three-state device controls the movement of first type. The example of this system is instrumentation panel controlling the state of a fluid flow valve. The device is only repaired if the instrumentation panel fails in its partial mode. The second system consists of two first-type of three-state devices operating in a series configuration. When one of the three state devices fails in its shorted or closed mode then repair is possible while the other one is still operating. The third system is composed of second-type of three state devices or systems operating in a series configuration. The three state devices are failed in its partial mode then the repair is only possible and the other device or system still operates successfully or both elements function in their partial modes.

MSD-31 : Determination of Polyalcohols by Smith Degradation Studies from Periodate Oxidised Seeds Polysaccharide of Jacaranda MimosaeifoliaLinn. Plant

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Jacaranda mimosaeifoliaLinn. plant belongs to the family-Bignoniaceae, is an important road side ornamental plant in Garhwal region of Northern India. It is also occurs in Brazil, Argentina, Tropical America and Philippines. Seeds are used in Ayurvedic system of medicine. The water soluble seeds yielded polysaccharide as D-galactose and D-mannose in 2:7 molar ratio from acid hydrolysed compound by column and paper chromatographic analysis. Present manuscript deals with the polyalcohols obtained by Smith degradation method of periodate oxidized seeds polysaccharide. Periodate oxidised seeds polysaccharide on reduction with sodium borohydride and hydrolysed with sulphuric acid. Hydrolysate on paper chromatographic analysis to revealed glycerol and erythritol in 1.20:3.65 molar ratio. Derivative of glycerol was prepared with pyridine and p-nitrobenzoyl chloride after recrystallization with acetone gave crystals of glycerol-tri-O-p-nitrobenzoate, had m.p. 188-189°C. Derivative of erythritol was prepared with pyridine and p-toluene sulphonyl chloride after recrystallization with water and ethanol mixture gave crystals of tetra-O-tosyl-erythritol

had m.p. 164-166°C. The large amount of erythritol released with acid hydrolysis of polyalcohols produced by sodium borohydride, serves as evidence that the main polymer linkages are of (1→4)-β-type and (1→6)-α-type at non-reducing end. It indicated a branching point on the average of 7th unit in the backbone for the support of earlier seeds polysaccharide structure of *Jacaranda mimosaeifolia*Linn. plant.

MSD-32 : Determination of FIC and MIC of Cefotaxime Plus Glycyrrhizin and Glycyrrhiza Glabra Root Extracts against Extended Spectrum Beta Lactamase Producing Gram Negative Bacteria

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Glycyrrhiza glabra (family: Leguminosae or Fabaceae) is a traditional medicinal plant mentioned in Indian Literature. It has potential activity to pacify inflammation, cough, bronchitis, ulcer and wounds. In present study *Glycyrrhiza glabra* roots' extracts were prepared with methanol and water and then analyzed for Glycyrrhizin content by HPLC and conventional biochemical methods. Glycyrrhizin concentrations were 0.1991mg ml⁻¹ and 0.1676 mg ml⁻¹, in the methanolic and aqueous extracts, respectively. The extracts were also checked for antibacterial activity against Cefotaxime (cephalosporin) resistant extended spectrum beta lactamase (ESBL) producing Gram negative pathogens. The ESBL producing genes SHV, CTX-M and TEM were recognized in these pathogens using PCR. The zone of inhibition in Kirby' Bauer experiments indicated a higher zone for methanol extract in comparison to aqueous extract. There was a positive correlation between the Glycyrrhizin concentration and zone of inhibition against candidate pathogens. The antibacterial activity of the Glycyrrhizin (purchased from market) was also determined and found to be directly proportional to its concentration. Further, the antibacterial effect of glycyrrhizin was compared with that of cefotaxime by observing their individual and synergistic effect against the selected pathogen. Synergistic effects of medicinal molecules were defined in terms of FIC and MIC of given plant extracts, glycyrrhizin and cefotaxime by analyzing all the data statistically.

MSD-33 : Single Cell Protein for Management of Rheumatoid Arthritis

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Previous findings on probiotics' molecular biology, immunology, bacterial discovery research support us to develop food supplement based on Lactobacillus using genes of immunomodulatory molecules (in house searching bioinformatically), for patients of Rheumatoid arthritis (RA). RA have been characteristic sign of hyperplasia, increased vascularity, and inflammatory cell infiltration. During the progression of disease CD⁴⁺ T cell, synovial cells, fibroblast, and macrophage shed cytokines with synergistic and antagonistic effects. Imbalance between pro-inflammatory and anti-inflammatory cytokines is an important factor in initiation of arthritis. It has been found that TNF- α plays a pivotal role in progression of arthritis. To date, the goal of treatment in RA is to reduce joint inflammation and pain, maximize joint function, and prevent joint destruction and deformity. Studies have shown that the consumption of genetically modified organisms/foods could influence cytokine profile in people. However, Bioinformatics and wet lab based research can suggest some molecules and their respective genes to insert in probiotics (like Lactobacillus) that can be taken by patients (orally). We could develop transgenic probiotics having genes to produce single cell protein responsible for immunomodulation, and ultimately equilibrate cytokines level and other immune cells in a patient.

MSD-34 : Consideration of Wlburn-Schneck Model to Study the Hematocrit and Slip Effects on Blood Flow Through an Overlapping Stenosis in Small Arteries

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In this study, we have included non-Newtonian Wlburn-Schneck model to evaluate blood flow characteristics above an artery in the presence of overlapping stenosis. Using appropriate boundary conditions, the analytical expressions for velocity profile, volumetric flow rate profile, impedance and WSS have been explored under the stenotic condition. The reaction of hematocrit level and slip velocity

on these flow characteristics have also been shown numerically and graphically. To draw the numerical calculations the latest version of MATLAB has been used. The study reveals that the impedance rises with the growth in hematocrit level and further that as the slip velocity shrinks. It is also found that the increased slip velocity and hematocrit percentage reduces WSS.

MSD-35 : Study of Pollution Status in River Ganga at Gola Ghat and Permut Ghat in 2017 Kanpur in Uttar Pradesh

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Water samples from Ganga River at Gola Ghat and Permut Ghat in Kanpur in Uttar Pradesh were collected and physico-chemical parameters were determined using standard analytical procedure in July to Dec.2017. pH 8.2-9.2, chloride and phosphate content of water samples were determined 18-19mg/l and 0.05-0.11 ppm respectively. Total hardness 96.6-111.1 mg/l, fluoride level also 6.0-6.3 mg/l. DO of samples were 4.1-7.3 mg/l, BOD were 3.0-7.5 mg/l and were 25-40 mg/l. These results were said to their agreed with the limits set by World Health Organization (WHO) for drinking water.

MSD-36 : Study of Unsteady Two-Dimensional Dusty Fluid Flow Through Porous Medium in Frenet Frame Field Under Transverse Magnetic Field

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In this paper we study two-dimensional unsteady dusty fluid flows through porous medium under transverse magnetic field in the Frenet frame field system of three-dimensional Euclidean spaces E^3 . Intrinsic decomposition of the basic equation is obtained in this system and flow analysis is carried out under different restrictions on the velocity of the gas and dust phase. Further, conclusions are written based on the results of analysis and discussion in all the cases. The stream lines are parabolic in different curvatures. The graphs are plotted for various quantities like density of the gas, number density of the dust

particles, magnetic field and permeability of the porous medium. Discussion and conclusion are given through the graph for unsteady fluid flows.

MSD-37 : Three Warehouse Production Inventory Model for Deteriorating Items with Advertisement and Price Dependent Demand

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This paper attempts to develop an inventory model for deteriorating items when demand depends on both, frequency of the advertisement and selling price of the items. The manufacturer uses three warehouses to store the items. They can be categorised as own warehouse (OW) and rental warehouse (RW). Rental warehouse considered in the present study are of two types; one having low rent with high deterioration and the other having high rent but low deterioration.

The present model is mainly applicable for dairy products, bakery items, floral industry etc. The main objective is to optimize the total inventory cost. The theoretical developments are numerically justified by an example. In order to study the effect of changes in the parameters on total cycle time and total cost, a sensitivity analysis is also carried out.

MSD-38 : Mathematics and Science are Interdependent

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Mathematics gives accurate results, interpretations and conclusions to the scientific ideas. There are symmetrical arrangements of nature all around on earth and universe infinitely. Galileo defined mathematics as 'A language in which God has written the world.' Truly nothing can be learnt and studied without mathematics. Systematic and mathematical use of science and technology leads to better results. It is an extension of scientific, theoretical and practical aspects of a concept, theory, design, discovery and invention.

Nevertheless, mathematics is an important tool that science like biology, physics, chemistry and computer science depends upon and they are inseparable. Contribution of India in mathematics and science, to the world, is greatly recognized. Therefore, mathematics should be incorporated at every level in syllabus for science and biology

students. In this paper interdependency of mathematics and science is being discussed along with its importance in syllabus .

MSD-39 : Effects of Thermal Radiation and Buoyancy Force on Transient Hartmann Flow in A Channel with Permeable Walls

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This paper examined a transient hydromagnetic mixed convection of a conducting fluid through a channel with permeable walls in the presence of radiative heat transfer. In this model, the fluid is considered as a incompressible, viscous, electrically and thermally conducting. The governed partial differential equations are obtained and solved analytically by variable separable technique. The results are obtained for velocity profile, temperature profile Nusselt number and skin friction at left wall as well as right wall. The effect of various parameters like suction/injection Reynolds number Re , Grashof number Gr , magnetic field parameter M , heat source parameter S , and thermal radiation parameter Nr on velocity profile, skin friction, temperature profile and Nusselt number has been discussed graphically.

MSD-40 : Unified Relative Jensen-Shannon & Arithmetic-Geometric Divergence Measure of Type α , New F-Divergence and Information Inequalities

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In this paper, we have considered some of his results using the unified relative Jensen-Shannon and arithmetic-geometric divergence of type α and relating it with the new f-divergence measure. Applications of information inequalities have also considered

MSD-41 : Pseudo Runge-Kutta(-Nyström) Method and its Exponentially-tting

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The aim of the present paper is to propose a class of exponentially

fitted pseudo Runge-Kutta(-Nyström) methods (ef-PRKNM) of arbitrarily high order for the special second order differential equation $y''(x) = f(x, y)$. This development is an effort to minimize the computational cost of classical Runge-Kutta Nyström (RKN) methods. The proposed development provides the way to make pseudo Runge-Kutta Nyström method best tuned to solve initial value problem (IVP) with periodic solutions. A classical m-stage RKN method requires m function evaluations (slopes) per step. The present methods require four evaluations in the first step and from second and onwards steps it requires only two evaluations per steps. The cost of computation in form of number of function evaluations (slopes) are compared via the Table 1. From which it is evident that our proposed development is cost efficient. The proposed method is tested on an IVP and the error obtained by this method is compared with the errors by RK third order (RK3) and Runge-Kutta Nyström 3-stage method (RKN3) which are shown in Tables 2. Table 2 inferred us superiority of the proposed methods over the classical RKN methods.

MSD-42 : आगरा जनपद के आगरा नगर की मलिन बस्तियों में निवासित विशिष्ट जाति समुदाय की लड़कियों का शैक्षिक एवं व्यवसायिक स्तर का अध्ययन

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प्रस्तुत अध्ययन द्वारा यह जानने का प्रयास किया गया है कि मलिन बस्तियों में निवासित विशिष्ट जाति समुदाय की लड़कियों का शैक्षिक एवं व्यवसायिक स्तर क्या है? आगरा नगर महापालिका की मलिन बस्तियों में निवास करने वाले अनुसूचित जाति के 1200 परिवारों को प्रतिदर्श अध्ययन में समाहित किया गया। मलिन बस्तियों में निवासित विशिष्ट जाति समुदाय की लड़कियों की शैक्षिक एवं व्यवसायिक स्तर का जानने हेतु स्वनिर्मित साक्षात्कार अनुसूचितका प्रयोग किया गया। संकलित प्रदत्तों के विश्लेषण के निमित्त प्रतिशत का प्रयोग किया गया। परिणामों से स्पष्ट है कि विशिष्ट जाति समुदाय के सर्वाधिक अभिभावक अपनी लड़कियों को उच्च पदों पर आसीन करना चाहते हैं। अर्थात् उनकी शैक्षिक एवं व्यवसायिक स्तर उच्च है।

MSD-43 : To Compare the Effect of Yoga on Male and Female Diabetic Patients

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Diabetes represents a cluster of metabolic diseases characterized

by high level of blood glucose (hyperglycaemia). People are greater risk of diabetes due to improper dietary practice, unhealthy life style, lack of physical exercise. The effect of yoga on blood sugar status of diabetic patient was conducted in 100 samples in both male and females. Statistical analysis showed that significant changes regarding mean blood sugar level was observed in male as well as in females before and after Yoga exercise. Thus, it can be concluded that Yoga exercise affects the blood sugar level in males as well as females. Consumption of high carbohydrates, fat diet was revealed as the major contributing cause of disease in both male and females.

MSD-44 : On Reliability of Three Unit System with Two Type of Repair

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This paper represents a redundant system, which consists of three units with each one either operable or failed. The failure can further divided into minor or major, so two repair facilities are considered. The system completely fails on the failure of the all units. Three similar units are in the system where one unit works as main and others in cold standby. An imperfect switch is used to on standby unit which takes sometime in switching. Failure rate and repair rate are constant. Laplace Transformation is used to solve the differential equations of the system. Hence the reliability is obtained by the sum of the probabilities of all operable states.

MSD-45 : Fuzzy Logic Concatenation in Face, Fingerprint and Iris Multimodal Biometric Identification System

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Security of information is one of the most important factors of information technology and communication. So systems need strong procedures to protect data and resources access from unauthorized users. There are number of ways to prove authentication and authorization. But the biometric authentication beat all other techniques. Biometric-based authentication systems represent a valid alternative to conventional approaches.

As Multimodal biometric identification system is more power full,

more accurate, less noisy data than the Single/Unimodal biometric system. This paper introduce three biometric techniques which are face recognition, fingerprint recognition, and iris recognition (i.e. Multi Biometric System) & aims at concatenating three biometric features namely face, fingerprint and iris to minimize False Accept Rate(FAR)and False Reject Rate (FRR). And shows using these biometrics has good result with high accuracy using fuzzy logic at decision level. In greater detail, fuzzy logic based approach at decision level is used for concatenation. Fuzzy logic is used for the effect of each biometric result combination. The proposed multimodal system achieves interesting results with several commonly used databases.

MSD-46 : Mathematical Model for Effective Health Training Programmes on mTB-Malaria-HIV/AIDS Transmission and their Co-infection

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A mathematical model is developed to see the effect of training programmes on mTB-Malaria-HIV/AIDS transmission and their co-infection. In this model training basic reproduction numbers are observed the other reproduction numbers for diseases. The equilibrium analysis and stability analysis are examined. The effect of educational and training programmes on transmission of diseases and their co-infection is illustrated numerically. Certain technical applications are discussed.

MSD-47 : Optical Properties of Nano Composites for Solar Device Applications

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Nano-composites exhibit optical properties leading to wide range applications. The unique properties of conducting polymers like stability, elasticity, plasticity, hardness, strength, thermal stability, insulation, conductivity not only provide great scope for their opto- electronic applications but also have led to the development of new models to explain their observed properties. We have considered poly-aniline (PANI) as the solvent and II-VI group semiconductor nano materials to prepare nano composites as they possess large variation of band gap as function of particle size which is a consequence of quantum confinement and vast applications in solar cells, fluorescent materials

and photonic research. The UV-Visible (UV-Vis) spectrographs of PANI, CdS and ZnS have been recorded separately and their composites with different weight proportions for structure and stability of materials and reported in this research paper. We have also observed the characteristics on the double beam spectrograph at wavelength range 200-1200 nm to measure band gap and particle size of materials. Relevant interpretations have been made and technological applications have been suggested. On the basis of recorded data the calculated values of particle size and band gap energy of materials reveal the variation of opto-electronic properties of these materials. This study leads to develop the basis of photo chromic sensors and solar cell applications.

MSD-48 : SFIR Model of Social Networks in internet forum

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In this study, an SIR model is formulated on social networks in a internet forum which include growth of online social networks through internet, which is produced by authors who write posts on a particular topic and post on social network websites. This Mathematical model (SIR) is based on ordinary differential equations for Social Networks. The work shows the study of parametric values estimated according to the literature and numerical results shows the unstable behavior. Finally, we look to the future to suggest how social network websites can improve understanding of posts dynamics which is beneficial for humans.

MSD-49 : Fuzzy Logic Based Cricket Player Performance Evaluator

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Cricket is amongst the most popular sports. Performance of players directly affects their ranking internationally. We propose a fuzzy logic based technique to evaluate the performance of cricket players. Various input parameters are being considered which are scaled using linguistic variables and a very simple yet effective Rule Based Model is developed to compute the effect of input parameters on the ranking of the players.

MSD-50 : On Reliability Analysis of A Two Unit Cold Standby System with Major and Minor Repair Rate

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The aim of this paper is to study the reliability of two units' cold standby redundant system. In this paper two units cold standby is considered. Each unit of the system has two modes, operable and failed. The system has four states two operable and two failed states. The failures of units are of two types major and minor. According as major or minor failure, failed unit is repaired with major or minor repair rate. We transform the basic equations of the proposed model into intergo-differential equations and solve it by Laplace transformation. Reliability of system is given as the sum of the probability of all operable states.

MSD-51 : A Bingham Plastic and Peripheral Layer Model of Blood Flow in the Presence of Stenosed Artery

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The present work deals with the blood flow through the stenosis assuming that flowing blood is represented by a two layered model. We considered a two-layered blood flow model to study the axisymmetric flow of blood by assuming the core layer as Bingham plastic (non-Newtonian fluid) and the peripheral layer (Newtonian fluid) in through the stenosis in the arteries. The analytical expressions for flow rate, resistance to flow and wall shear stress have been developed in this model. We have depicts the effect of stenosis on resistance to flow and wall shear stress. This study gives an insight into the effects of slip velocity on the volumetric flow rate, resistance to flow and wall shear stress.

MSD-52 : On Reliability of Two Units System With Standby

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The object of this paper is to study the reliability of two units cold standby system. Each unit has two states operable or failed. The unit has constant failure rate. The system has four states two operable or two inoperable. The system has only one minor repair facility. The system goes to failed state when both the units fails. Laplace Transformation is used to solve the differential equations of the system. Hence the reliability is obtained by the sum of the probability of all operable states.

MSD-53 : आगरा शहर के निर्बल युवा वर्ग में नशीले पदार्थों की बढ़ती हुई समस्या का अध्ययन

सनातन सिंह ओझा तथा बी.डी.एस. गौतम (रिटायर्ड)

समाजशास्त्र विभाग, नारायण कॉलेज, शिकोहाबाद, फिरोजाबाद (उ.प्र.)

नशा एक अभिशाप है। यह एक ऐसी बुराई है, जिससे इन्सान का अनमोल जीवन समय ये पहले ही मौत का शिकार हो जाता है। नशे के लिए समाज में शराब, गांजा, भांग, अफीम, जर्दा, गुटखा, तम्बाकू और धूम्रपान (बीड़ी, सिगरेट, हुक्का, चिलम) सहित चरस, स्मैक, कोकीन, ग्राउन सुगर जैसे- घातक मादक दवाओं और पदार्थों का उपयोग किया जा रहा है। इन जहरीले तथा नशीले पदार्थों के सेवन से व्यक्ति को शारीरिक, मानसिक और आर्थिक हानि पहुँचाने के साथ ही इससे सामाजिक वातावरण भी प्रदूषित होता ही है, साथ ही स्वयं और परिवार की सामाजिक स्थिति को भी भारी नुकसान पहुँचता है। इस की वर्तमान सर्वप्रियता ने इसे सब प्रकार के पेशों में फैला दिया है जिसमें फिल्में, थिएटर, शिक्षा, कला, इंजीनियरिंग, भवन निर्माण कला तथा अन्य भी शामिल हैं। नशे की गिरफ्त में आए किशोरों एवं युवाओं का व्यवहार अचानक बदल जाता है। नशे के शिकार युवाओं पर हमेशा एक उदासी छाई रहती है। वे अव्यवस्थित, अनुशासनहीन जीवन शैली का तेजी से शिकार हो जाते हैं एवं नशे के कारण उनका शरीर शिथिल हो जाता है। इस में ऐसी शक्ति है कि वह चेतन या अचेतन की सीमाओं को तोड़ देती है और इस प्रकार एक भ्रम उत्पन्न कर देती है। नशे के आदी व्यक्ति को समाज में हेय की दृष्टि से देखा जाता है। नशा करने वाला व्यक्ति परिवार के लिए बोझ स्वरूप हो जाता है, उसकी समाज एवं राष्ट्र के लिए उपादेयता शून्य हो जाती है।

MSD-54 : Evaluation of Air Pollution Risk on Human Health Using Fuzzy Synthetic Evaluation method

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The air quality index is a simple and generalized way to describe the air quality in China, Hong Kong, Malaysia and now in India. India air quality index (IND-AQI) is mainly a health related index with the descriptor words: good, satisfactory, moderately polluted, poor, very poor, severe. Centre Pollution Control Board (CPCB) is responsible for measuring the level of air pollution in India. In India the AQI is based on the level of 8 atmospheric pollutants namely, $PM_{2.5}$, PM_{10} , SO_2 , NO_2 , NO_3 , O_3 , CO, PB. From the human health risk view point it becomes necessary to measure first the concentration of criteria air pollutants in the atmosphere to describe the status of air that we breathe. In this research paper we use the fuzzy synthetic technique to calculate the air pollution risk on human health. These results can help the environmental regulators to make the right policy in environmental management.

MSD-55 : Allelopathic Effect of Two Weeds on Vegetative Growth of Triticum Aestivum

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In this study, allelopathic effect of *Chenopodium murale* and *Solanum nigrum* on seed germination and seed growth of *Triticum aestivum* were evaluated. In the present investigation *Chenopodium murale* was found to have strongest negative effect on the germination and growth of wheat seedling. Unfavourable climate change is the serious threat to the global foods security and due to rising temperature and uneven distribution of rainfall crop growth is affected. Some plants like *Chenopodium murale* and *Solanum nigrum* has a profound allelopathic effect on different plants like wheat and barley. The inhibitory effects increased with the concentration applied beside the cold leachates are more effective than their hot leachates while its reverse is true in case of *Solanum nigrum*. The *Chenopodium murale* and *Solanum nigrum* significantly inhibits the growth and germination of seedlings of *Triticum aestivum* in both in-vitro as well as field condition.

MSD-56 : The Risk of Cancellation of Policies using The Concept of Fuzzy Inference System

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The problem facing by the insurance company is the preventive avoidance of cancellation. A conversation with the client held prior to latter's decision to cancel a contract increases the likelihood of contract continuity. So companies are in need of reliable expert system that can help them to evaluate the risk of cancellation of the policies in future. With the help of fuzzy system it is possible to identify clients who may potentially cancel and take timely measure to safeguard the portfolio. This model is designed by using fuzzy mathematics and expert system to provide indicative results on the risk of cancellation of the policies in future. We have solved this problem using MATLAB 6.5.

MSD-57 : A User Friendly Authentication Procedure for Peer to Peer Communication

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Authentication procedure and protocols are very important for data and communication security. Cryptographers are trying to develop unique authentication protocols for different applications. In this paper, we present a unique method for authentication. The important thing is that, it's a user friendly procedure. Anybody can generate authentication certificate and send it to receiver. On the other side, receiver can analyze and verify it in order to make entity authentication successful.

MSD-58 : मुस्लिम महिलाओं में परिवर्तित संवैधानिक चेतना की स्थिति

गीता कुमारी तथा पी०के० शर्मा

समाजशास्त्र विभाग, पी०सी० बागला कॉलेज, हाथरस, (उ०प्र०)

धर्म के आधार पर ही परिवार का प्रत्येक सदस्य अपने दायित्वों को पूरा करने में रुचि लेता है। परिवार के सभी सदस्य मोहम्मद साहब के उपदेशों को ध्यान में रखकर आचरण करते हैं। मुसलमानों में उदारवादी विचारों, भावनाओं के प्रसार से मुस्लिम महिलाओं की सामाजिक स्थिति को सुधारने वाले और उनके लिए हानिकर रीति-रिवाज को खत्म करने वाले आन्दोलनों को काफी बल मिला। बाल-विवाह के साथ-साथ बहु-विवाह प्रथा

भी खत्म होने लगी। ऑल इण्डिया मुस्लिम क्रान्फेस मुस्लिम औरतो की शिक्षा के लिए नियमित और विशिष्ट आर्थिक अनुदान देता रहा। इस तरह धर्म और समाज सुधार के आन्दोलन मुसलमानों में भी तेजी से बढ़े। तुर्की में राष्ट्रीय धर्मनिरपेक्ष राजसत्ता के उद्भव के कारण हिन्दुस्तानी मुसलमानों का दृष्टिकोण भी व्यापक हुआ। बाद में साम्यवादियों, समाजवादियों या जवाहरलाल नेहरू जैसे वामपंथी राष्ट्रवादियों के नेतृत्व में जो स्वतन्त्र मजदूर और किसान आन्दोलन उभरे, उनके चलते भी मुसलमान जनता में राष्ट्रीय और वर्गीय चेतना का प्रादुर्भाव हुआ। मुस्लिम विवाह अधिनियम 1986 की संवैधानिकता को चुनौती देने वाली कई याचिकाएँ माननीय उच्चतम न्यायालय के समक्ष प्रस्तुत हुईं तथा इसका भविष्य एक दशक से अधिक तक अनिश्चितता के अधर में लटक रहा। माननीय सर्वोच्च न्यायालय ने कहा कि तलाकशुदा मुस्लिम पत्नी के पूर्व पति का दायित्व है कि वह उसके भविष्य के लिए उसे एक उचित एवं न्यायोचित 'सामग्री' 'रसद' सहित उसके भरण-पोषण की व्यवस्था करे। इस अधिनियम की धारा 3(1) के अन्तर्गत पूर्व पति का दायित्व, इद्दत की अवधि तक एवं इस अवधि के पश्चात् भी ऐसी ही व्यवस्था करे। यदि कोई रिश्तेदार या सन्तान अथवा उसके माता-पिता भरण-पोषण देने में असमर्थ हो, तो उस तलाकशुदा महिला के भरण-पोषण का दायित्व राज्य के वक्फ-बोर्ड का है। मुस्लिम महिला अधिनियम 1986 भारत के संविधान के अनुच्छेद 14, 15 तथा 21 का अतिक्रमण (उल्लंघन) नहीं करता है। संविधान के अनुच्छेद 21 के जीवन और व्यक्तिगत स्वतन्त्रता में प्रतिष्ठा सहित जीवन निहित है। इस अधिनियम के पहले एक मुस्लिम महिला जिसे उसके पति ने तलाक दिया हो, उसे दण्ड-प्रक्रिया संहिता की धारा 125 के अन्तर्गत भरण-पोषण का अधिकार तब तक मिलता रहता था जब तक कि उसने पुनर्विवाह न किया हो। संविधान के अनुच्छेद 14 तथा 15 के उल्लंघन जैसा प्रतीत होता है, क्योंकि यह अधिनियम केवल तलाकशुदा मुस्लिम महिला के ऊपर लागू होता है और केवल इस आधार पर लागू होता है कि वे मुस्लिम धर्म के हैं।

MSD-59 : पंचायत राज व्यवस्था में महिलाओं की राजनीति के प्रति जागरूकता

तरुणेश तथा बी०डी०एस० गौतम (रिटायर्ड)

समाजशास्त्र विभाग, नारायण कॉलेज, शिकोहाबाद, फिरोजाबाद (उ०प्र०)

भारत प्रमुखतः गाँवों का देश है। प्राचीन काल से ही भारतीय ग्रामीण समुदाय की सामाजिक संरचना के तीन महत्वपूर्ण आधार जाति प्रथा, संयुक्त परिवार और ग्रामीण पंचायत रहे हैं। स्वशासन की इकाई के रूप में ग्रामीण पंचायतों का विशेष महत्व रहा है। बलवंतराय मेहता समिति (1958) की सिफारिशों के आधार पर त्रिस्तरीय पंचायतीराज व्यवस्था लागू की गई है। यही माना जाता है कि देश का समग्र विकास महिलाओं की

भागीदारी के बिना नहीं हो सकता है। लोकतन्त्रीय राजनीतिक व्यवस्था में पंचायतीराज ही वह माध्यम है जो शासन को सामान्य जन के दरवाजे तक लाता है। लोकतन्त्र के उन्नयन में पंचायतीराज की विशेष भूमिका रही है। महिलाओं के विकास के लिए तैयार किया गया दस्तावेज 1985 में स्वीकार किया गया है कि महिलाओं द्वारा अनौपचारिक राजनैतिक गतिविधियों में तीव्र वृद्धि के बावजूद राजनैतिक ढाँचे में उनकी भूमिका वास्तव में अपरिवर्तित रही है। देश में पंचायतीराज व्यवस्था में महिलाओं की एक तिहाई भागीदारी होने और पंचायतीराज व्यवस्था को सुदृढ़ करने के उद्देश्य से 1992 में 73वाँ संवैधानिक अधिनियम पारित हुआ। राजनीति में महिलाओं की विस्तृत भागीदारी जाति, धर्म, जमींदारी तथा पारिवारिक स्थिति जैसे पारस्परिक कारणों की वजह से बहुत सीमित है। इस संविधान के अनुसार एक ग्राम सभा का गठन होना अनिवार्य है जिसमें महिलाओं की भागीदारी के साथ-साथ ग्राम पंचायतों, पंचायत समितियों की जिला परिषदों के अध्यक्षों के पदों की कुल संख्या के कम से कम एक तिहाई पद महिलाओं के लिए आरक्षित किए गए हैं अर्थात् एक-तिहाई संस्थाओं की अध्यक्ष भी महिलाएँ होंगी।

MSD-60 : A Mathematical Model for the Positive Effect of Obesity on Tumor Growth

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There is a long history of mathematical models to be used to simulate dynamic biological processes. Several models have been developed to predict and study the tumor growth depending on various biological phenomena. Many experimental studies have found that obesity is a positive factor for tumor growth in different types of cancers. In this model we have considered the obesity factor as fat cells and studied tumor growth. Our model consists of three ordinary differential equations with a logistic equation for the growth of the amount of Fat stored. We analyse the stability of the equilibrium obtained using parameter values reported in the literature.

MSD-61 : Duals of Some Entire Bicomplex Spaces

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We have defined different kinds of bicomplex duals, like alpha, beta, gamma, delta and their combinations, in our previous papers. In this paper we have studied them and found some important and interesting results among those duals.

MSD-62 : Modelling the Effects of Awareness Programs by Media to Control the Spread of Infectious diseases

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In this paper, a nonlinear mathematical model is proposed to study the effects of awareness programs by media on the spread of an infectious disease with standard form of incidence. The cumulative density of awareness programs by media is represented by a dependent variable the growth rate of which is proportional to the number of infectives in the population. The focus of this paper is to study the effects of awareness programs on making susceptibles aware of the dreadfulness of the disease and motivate them to avoid interactions with infectives. The model is analyzed by using the stability theory of differential equation and numerical simulation. The model analysis shows that spread of the disease in the population can be reduced considerably if awareness programs by media are conducted effectively. The numerical simulation of the model confirms analytical result.

MSD-63 : A Fuzzy Logic Model to Forecast Stock Market Momentum

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Forecasting is a very complex process and requires considering many dimensions. The stock market index values are very chaotic in nature and highly random; hence forecasting stock market values is a very challenging job. Financial forecasting that too stock market prediction is an important area of interest to stock investors, stock traders and applied researchers. To determine the momentum of the market helps in predicting future market movements and that helps to take effective buy and sell decisions. The experts in the stock markets use many attributes like historical prices, company earnings, company orders, etc. and in this paper the NIFTY-50 index historical prices and three factors that affect the stock index are used, hence it becomes far more difficult to forecast. The proposed fuzzy model helps in identifying the momentum (bullish, neutral or bearish) of the index. It can forecast the short term momentum by considering 14 day historic data and three factors as the base for predicting future 5 day

movement or momentum. The consecutive close-open values and input factor are fuzzified to get a fuzzy momentum value, the momentum which is bullish, bearish or neutral continues to some extent i.e. for few days and this idea helps to forecast the momentum. The results found suggest that fuzzy modeling for this purpose is very promising.

MSD-64 : Secondary Metabolites Production of China Rose for Antidiabetic Properties

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China rose (*Hibiscus rosa-sinensis*) is an evergreen perennial plant that grows in tropical and sub-tropical regions. It has charismatic bright red and single layer flower. It is an economically important plant and can be produced in the greenhouse nurseries as a potted plant and commonly used as an indoor plant. Although the commercial value of *Hibiscus rosa-sinensis* as cut flowers are some what limited also due to fact that its flower blooms only few days, between one and three at the most, but it has high commercial value as a landscaping plant. Various parts of this plant, like leaves, flowers and roots, have been known to possess medicinal properties like menorrhagia, oral-contraceptive, laxative etc. Pharmacological investigations of the genus *Hibiscus* indicated the existence of some species with interesting biological activities such as anti-hypertensive, anti-inflammatory, hepato-protective, anti-tumoric, **anti-diabetic**, anti-convulsive, anti-oxidative and anti-mutagenic. Various concentration and combination of different PGR (Auxin, Cytokinin etc.) will be used for mass callusing. Through the obtained callus, experiments for active ingredient analysis will be conducted. On the basis of the populations where increased level of secondary metabolites will be obtained will be further used as elite explants for mass propagation.

MSD-65 : Mass Multiplication of *Tinospora cordifolia* : An Immense Therapeutic Property Plant

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Guduchi (*Tinospora cordifolia*) is a well known medicinal shrub in Asia of family menispermaceae. It covers great parts of India but now is listed threatened species in many areas of our country. This plant species is a potent source of many active compounds used in modern drug formulations. There are many medicinal plants that are

also in trouble because of many reasons such as over harvesting, destruction of habits, population growth, urbanization and unrestricted collection of medicinal plants from wild. Hence, there is urgent need for its conservation. Plant tissue culture is the only way or technique for conserving the endangered, rare and threatened medicinal plant in a short period of time. Purpose of the present study was to establish an effective *in vitro* micropropagation protocol for *Tinospora cordifolia* using nodal segments. It has been observed that inoculation in MS basal medium supplemented with 0.5mg/L BAP + 0.2mg/L NAA produced multiple shoots. Regenerated shoots rooted on ½ strength MS basal medium supplemented with 1.0 mg/L BAP+0.2mg/L IAA. All rooted plantlets were acclimatized successfully.

MSD-66 : On Integrated and Differentiated C_2 -Sequence Spaces

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The integrated and differentiated C_2 -sequence spaces are defined and studied by using infinite matrices of the bicomplex number, norm on C_2 , and the Orlicz functions. We studied some topological properties of the C_2 -sequence spaces. We also defined the -duals of the integrated and differentiated C_2 -sequence spaces.

MSD-67 : Growth of Selected Varieties of Wheat (*Triticum aestivum*) Treated with IOCL Waste Water

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Seed germination and early growth of selected varieties of wheat (*Triticum aestivum*) i.e. PBW 343, PBW 502, DEW 17 and HD 2894 seedlings were observed under irrigation with IOCL treated sewage water. The stimulation of growth was accompanied by induction in synthesis of pigments, carbohydrates, nitrogenous compounds, etc. It was observed that the IOCL treated waste water increases the rate of germination, seedling growth and shoot and root length of all varieties of wheat compared to the underground water of nearby areas of the refinery. The maximum shoot length after one month of sowing was observed in PBW 343 treated with underground water but in comparison IOCL treated water resulted in the better growth of shoot as well as root.

MSD-68 : MHD Flow of an Incompressible Viscous Unsteady Fluid Through Porous Medium between Two Parallel Plates

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In the present investigation, we have discussed MHD flow of viscous fluid through Porous Medium. In this problem, we have obtained an analytical solution of the Unsteady flow of an Incompressible Viscous fluid through Porous Medium under the action of time varying pressure gradient and a transverse magnetic field. Velocity profiles have been drawn for different values of Hartmann Number M and permeability of the medium.

MSD-69 : A Modified Secure Mobile Banking Authentication Scheme Using Signcryption, Pair Based Text Authentication, and Contactless Smartcard

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Nowadays, mobile banking become a very popular tool which consumers can conduct financial transactions such as shopping, monitoring accounts balance, transferring funds and other payments etc. Consumers dependency on mobile needs, make people take a little bit more interest on mobile banking. The use of one time password which is sent to the user mobile phone by short message service (SMS) is a vulnerability which we want to solve with proposing a new modified scheme. We replace the authentication using one time password with contactless smartcard to prevent attackers to use the unencrypted message which is sent to the user's mobile phone. Moreover, it deals vulnerability of spoofer to send an SMS pretending as a bank's server. Contactless smartcard is proposed because of its flexibility and security which easier to bring in our wallet than the common passcode generators. The replacement of SMS-based authentication with contactless smartcard removes the vulnerability of unauthorized users to act as a legitimate user to exploit the mobile banking user's account. Besides that, we use public-private key pair and PIN to provide two factors authentication and mutual

authentication. We use signcryption scheme to provide the efficiency of the computation. Pair based text authentication is also proposed for the login process as a solution of shoulder-surfing attack. Scyther tool is used to analyze the security of authentication protocol in our proposed scheme. From the proposed scheme, we are able to provide more security protection for mobile banking service.

MSD-70 : A Study on Blockchain-based P2P File Sharing Incentive

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As we know proper incentive mechanism encourages for active data sharing, P2P file sharing systems also require this mechanism. Traditional incentives mechanisms are based on reputation, credit or tit-for-tat are still challenged by free riding and whitewashing. We explore solutions based on blockchain, which is the new emerged decentralized trustful public ledger, and propose a blockchain-based file sharing incentive mechanism leveraged by cryptocurrency and smart contracts. In our study, a file is sliced into pieces. A user who downloads data will request pieces with randomized order and directly pay for each piece. With the analysis in game theoretic models, rational players intend to cooperate in the procedure. We also evaluate the approach with simulations and experiments. We envision that our solution is not only promising for P2P file sharing, but also a stepping stone for general data sharing applications over the public blockchain.

MSD-71 : Challenges for Traditional Cryptography and Possibilities

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Since last four decades cryptography is playing a vital role in the area of privacy and security. Mathematical algorithms are becoming stronger day by day, shorter keys are replaced by very long keys. Even current implementations are also more secure if we compare them from earlier used implementations. But due to evolvement of cloud computing and quantum computing things will change at a great pace which is going to impact whole computing process and especially cryptology. Almost all the cryptographic systems will not be able to

resist against quantum computers. At that time we have to search some new kind of crypto methods to fight against the threat. Here we are going to find the impact of cloud computing and quantum computing on cryptography and various possibilities to protect the system.

MSD-72 : A Model for The Aerospace Dynamical Problem using Fuzzy Abduction Technique

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This problem is designed to apply Fuzzy Abduction Technique in Aerospace Dynamical problem. A model of aeroplane is proposed for consideration at different air density level of the atmosphere and at different speed of the plane. Different air density of the atmosphere, angle of wings and speed of the plane are selected as parameters to be studied. In this chapter a matter is developed to determine the angle of wings of the plane with respect to its axis at different air density level of the atmosphere and at different speed of the plane. Data are given to justify our proposed method theoretically.

MSD-73 : A Model for Detecting The Lung Cancer Disease using Fuzzy Logic System

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Now a days Lung cancer is responsible for the most cancer deaths in both men and women throughout the world. There are different factors for different types of cancer. Lung cancer is a type of cancer that starts in the lungs. The purpose of this paper is to design a fuzzy expert system for the diagnosis of lung cancer. The system has 6 inputs and 1 output, in which the inputs are “persistent cough and coughing up blood”, “smoking and exposure of carcinogenic gases”, “weight loss”, “chronic infections”, “swelling in your neck and face”, “chest pain” and output parameter which is based on the advances and spreading of tumor. We have used Mamadani inference engine to deduce from the input parameters to stage the cancer. Results of the experiments have been compared to show the superiority of the proposed method in terms of detection accuracy of staging lung cancer. The superiority reasons of our system is based on considering important and common symptoms of lung cancer, removing irrelevant and possible bronchitis and pneumonia symptoms and also we have

considered the duration of time which symptoms started to phase themselves.

MSD-74 : Modeling the Effect of Mitigation Options on Methane Abatement in the Atmosphere

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It is well known that many anthropogenic activities such as agriculture, livestock population, deforestation, burning of fossil fuels and several industrial activities have significant effect on global warming due to emission of greenhouse gases. Methane is one of the main greenhouse gases together with carbon dioxide (CO₂) contributing global warming. The major anthropogenic sources of methane include rice yield in a rice paddy, livestock, biomass burning, natural gas and oil systems, etc. Rice yield in a rice paddy and livestock are the major factors which affect the atmospheric level of CH₄. The control of methane emission is crucial to lower the concentration of methane in the atmosphere by using some mitigation options and thus protecting human beings and our environment from adverse effects of global warming. Taking it in to account, in this paper a non-linear mathematical model is proposed and analyzed to study the effects of mitigation options on methane abatement in the atmosphere caused by rice paddy and livestock population. In the modeling process the four interacting variables are considered; density of rice yield in a rice paddy, density of livestock population, atmospheric concentration of CH_4 and the equation for the variable governing mitigation options.

The non-linear model is analyzed by using the stability theory of differential equations and computer simulation. The analysis shows that mitigation options can control the concentration of atmospheric methane considerably. The computer simulation of the model system confirms analytical results.

MSD-75 : Homa : A Case Study on a Scientific Approach towards Reduction of Harmful Gases from Atmosphere

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Air pollution from burning of fossil fuels is the major cause of acid

rain. The main chemicals in air pollution that create acid rain are sulphur dioxide (SO_x) and nitrogen (NO_x). Acid rain usually forms high in the clouds where sulphur dioxide and nitrogen oxides react with water, oxygen, and oxidants. This mixture forms a mild solution of sulphuric acid and nitric acid. Sunlight increases the rate of most of these reactions. Rainwater, snow, fog, and other forms of precipitation containing those mild solutions of sulphuric and nitric acids fall on earth as acid rain. Acid rain does not account for all of the acidic particles and gases onto buildings, cars, home, and trees. In some instances, these gases and particles can eat away the things on which they settle. Dry deposited gases and particles are sometimes washed from the trees and other surfaces by rainstorms. When that happens, the runoff water adds those acids to the acid rain, making the combination more acidic than the falling rain alone. The combination of acid rain plus dry deposited acid is called acid deposition.

Homa is a scientific process which consists of making 32 offerings per day 16 at sunrise and 16 at sunset of Ayurvedic herbs mixed with cow ghee to fire, along with by chanting of Vedic mantras. Though Homa is a vedic ritual but as per belief it has a scientific significance too and therefore we decided to study the wondrous effects of Homa fumes on Acid rain and plant growth to see the scientific approach of Homa fumes on sustainable environment. Experiments were regularly conducted for three consecutive years to study the effects of Homa fumes on simulated acid rain SO_x and NO_x levels on environment and plant growth. Experiments were also conducted to check the effects of Homa ash on ecophysiological characters of *Glycine max*. From the study it was found that Homa resulted in reduction in the SO_x level but slight increase in NO_x level in surrounding air. There was significant increase in seed germination and plant growth as well as eco-physiological characters due to Homa. Our results suggested that Homa fumes can be used to reduce the acid rain effects. Thus, it can be concluded that Homa is beneficial for environmental and agricultural aspects.

MSD-76 : Vulnerability of Routing Protocols : A Cryptographic Aspect

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Cryptography is an art of providing security to data communication. Cryptography provides secrecy, authentication, data integrity and non repudiation. For various computer networks, the role of router is very important because it passes the data traffic. The security of

entire network will be in trouble if the security of router is compromised. So in this paper we talk about cryptographic loopholes in dynamic routing protocols.

MSD-77 : Common Fixed Point Theorems using Implicit Relation and Clr Property in Fuzzy Metric Spaces

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The purpose of this paper is to consider the notion of common limit range property i.e. $Clr(g)$ property given by Sintunavarat and Kumam (2011) and establish the existence and uniqueness of fixed point for a pair of weakly compatible self – maps in fuzzy metric spaces . In this theorem also continuity of any mapping, completeness of the whole space or range space of any mapping are not necessary .we also cited illustrative examples in support of our result . The presented theorem generalizes and extends the several known results existing in the literature. Ams classifications (2010): 47h10, 54h25. Keywords and phrases: Fuzzy metric space, implicit relation, compatible maps, weakly compatible maps, common limit range property ($Clrg$). The purpose of this paper is to consider the notion of common limit range property i.e. $Clr(g)$ property given by Sintunavarat and Kumam (2011) and establish the existence and uniqueness of fixed point for a pair of weakly compatible self – maps in fuzzy metric spaces . In this theorem also continuity of any mapping, completeness of the whole space or range space of any mapping are not necessary .we also cited illustrative examples in support of our result . The presented theorem generalizes and extends the several known results existing in the literature. Ams classifications (2010): 47h10, 54h25.

MSD-78 : Existence Theorem for Second Order Boundary Value Problem

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In this article an existence theorem for ordinary nonlinear differential equation with the periodic boundary value problem is proved under mixed generalized lipschitz and carathoeodory conditions for the aspects of solution.our result includes some known existence results for ordinary nonlinear differential equations with the periodic boundary value problems.

MSD-79 : A Computational Approach to Study Avascular and Vascular Tumor Growth

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This paper demonstrates the use of computational approach to design an improved study of avascular tumor in the absence of treatment. A temporal model and spatio-temporal model that represents the growth of avascular tumor and vascular has been considered.

MSD-80 : Diffusion Equation Model for Determining the Concentration of Urea in Artificial Kidney

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In medicine, dialysis is primarily used to provide an artificial replacement for lost kidney function (renal replacement therapy) due to renal failure. Dialysis may be used for very sick patients, who have suddenly but temporarily lost their kidney function (acute renal failure) or for quite stable patients who have permanently lost their kidney function. We present a model, which consist of partial differential equation defining the process of diffusion in artificial kidney and finally get the solution of this equation in the form of concentration of urea in blood by using the finite difference approach. The graph drawn between concentration and radial distance shows the variation between these two quantity. Dialysis treatments replace some of these functions through diffusion (waste removal) and ultrafiltration (fluid removal).

MSD-81 : Application of Cloud Computing Technology in Digital Library

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This write up is intended to summarize the concept of Cloud Computing in its simple form and the application of it in the field of library and information science. Cloud computing technology came up as a boon for libraries and is offering various opportunities for libraries to connect their services with Cloud. In the simplest terms, cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. The cloud is just a metaphor for the Internet. The cloud is also not about having a dedicated network attached storage (NAS) hardware or server in

residence computing is a new technique in Information technology in which the application, data and resources are processed to all user over internet latest technological development has brought a dramatic change in every field. Developing in the cloud enables users to get their applications to market quickly. Hardware failures do not result in data loss because of networked backups. Cloud computing uses remote resources, saving organizations the cost of servers and other equipment of information technology on the Libraries. The main objective is to describe the information technology on the development of the curriculum of the Library information science. Today library are using the information Technology in general and to automate a wide range of administrative and technical process, build databases, network and provide better services to their users. The use of information technology has become imperative for the efficient management of modern libraries. Information technology is helped to changed the libraries in house activities (Acquisition, catalouging, indexing, serial control, circulation etc.) So by the use of information Technology the library services completely changed. Information technology in positively on library and information system and services they provide for users. The Libraries have been automated, networked and now moving towards paper less or virtual libraries.

MSD-82 : Markovian Model for Cellular Radio System with Retrial Attempts

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A novel approximate technique is proposed for the estimation of call blocking probabilities in cellular mobile telephony networks, where call blocking triggers customer retrials. We examine the impact that new session retrials have on the performance of a mobile cellular network which deploys a queue for handover and an exponential deadline for serving requests. In this paper, two models dealing with the call retrial phenomenon are presented. The first model considers a base station with a customer population and the retry of blocked handovers. In the planning of modern cellular mobile communication system, the customer's behavior has to be carefully taken into account. The second model incorporates the concept of the impatient users. The efficiency of the call handling mechanism is evaluated in both models.

The influence of the repeated attempts on the quality of service experienced by the mobile customers is discussed by means of numerical results. In addition, the effects of various system parameters on the new call blocking probability, the handoff data/voice call blocking

probability and the grade of service are displayed and analyzed graphically.

MSD-83 : Fuzzy Data Envelopment Analysis Approach for Academic Performance Evaluation

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Data envelopment analysis (DEA) is a linear programming based methodology to measure the performance efficiencies of academic institute which produce multiple outputs by consuming multiple inputs. The all data is considered here as linguistic variables characterized by fuzzy numbers. In this paper, we develop some fuzzy DEA models to measure the relative performance efficiencies of some academic institute and ranked them by their performance.

MSD-84 : Transient Solution of Multi-Server Poisson Queueing Model with Truncated Exponential Service Times

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In this paper transient solution of multi-server Poisson queueing model with truncated exponential service times is discussed. The probability generating function of the numbers of customers in the queue are derived by using Markov Chain Process. The system characteristics like average number of customers in the queue, average waiting time of a customer in the queue, the variance of the system size etc. are derived. It is established that the truncation parameter has significant influence on system characteristics. Special cases of the model are also discussed.

MSD-85 : Academic Performance Indicators (API) For Teachers of Higher Educational Institutions

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This study deals the meaning and concept of academic performance indicator (API) and there is probable structure of performance indicator for teachers in higher education. Because the change is rule of nature, so we have to accept changes, challenges and enjoy it. In this process some changes are also occurring in teaching field of higher educational institutions i.e. the performance of teachers will be assessed on the basis of a performance based Assessment system (PBAS) in which scores have been assigned to academic performance indicator

(API). There are three categories on which academic performance will be rated first is teaching, learning and evaluation- related activities, second is co-curricular–extension and professional development related activities and third is research and academic contribution under each category there are certain per-decided activities which are assigned certain points. Teachers will have to perform these activities to earn marks or credits for various promotion.

MSD-86 : E-Information Resource Sharing Through Consortia

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Information is considered as a vital resource for communication/ dissemination of knowledge of one individual to another from the very early stage of human civilization to till today and thereby has become an inevitable element of all human activities and developments. The explosion of information, in multidimensional form and voluminous development has urged the libraries to adopt new philosophies and technologies for collection development and reduce the costs of information. Today, most of the librarians are faced with economic problems, especially in developing countries to collect all the new generated information and to satisfy the high degree of aspiration for knowledge of the users. The rapid progress of information technology through R & D activities all over the world now tries to satisfy the information need of the human being in diverse manner. The main task of a librarian is to adjust the input resources with the desired output by adopting various alternatives for taking effective decisions and extending the services smoothly. As the information demand of the user to a greater extent is beyond the control of the capacity of librarians much of the exercise rests on the input resources.

Concept of 'Library Co-operation' emerged for rendering better services to users' community through borrowing & lending of documents in formal manner. 'Library Resources' is the term that applies to personnel, material, functions or activities available in a library for satisfying the human needs & demands to acquire their desired knowledge. The new object of resource sharing has changed the old concept due to multi-dimensional growth of published documents through R&D activities in recent past, cost of the information, advancement of newly invented technologies for information processing and dissemination, etc. Resource sharing entails apportioning, allocating, distributing or contributing something on a voluntary basis for mutual benefits among a group of libraries with a view to achieving

best utilization of resources by the ultimate users at a wider level. Consortia may be defined as “A cooperative arrangement of purchasing electronic recourses among a group of institutions, which will provide collective purchasing power and enable them to avail best possible bargaining facility to ensure highest discount price for electronic journals”. Library consortium is a “community (a cooperative) of two or more information agencies which have formally agreed to coordinate, cooperate or consolidate certain function” to achieve mutual objectives. It is an association of a group of library to achieve mutually the joint benefits.

Steady growth of computers, optical storage media and communication technologies became dominant in Resource Sharing system and it acts as “Resource Exploitation System”. Mainly due to excessive use of communication technology Resource Sharing System has become effective and popularized by library Networking Consortiums. Use of these technologies facilitated library co-operation for quick and fast sharing of information at any destination.

MSD-87 : Fuzzy Risk Analysis Model for E-tourism Investment

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This paper provides a Fuzzy based decision support system (DSS) for risk analysis in E-tourism (Electronic Tourism) investment. In general term, E-tourism is the use of information and communication technology (ICT) in tourism which may allow operating tourism in least variable cost, least time and increased work efficiency. It is worth noting that there are many factors that affect the development of E-tourism. To demonstrate the effectiveness of the system, four factors of investment, Gross domestic product (GDP), E-tourism infrastructure and stability of the regions are considered in the present study. These parameters are fuzzified and a fuzzy rule-base has been developed for calculating risk factor for the E-tourism investment. Case studies have been presented using the developed, underdeveloped and developing model. It shows that the investment possibility in developed, underdeveloped and developing region is high with low risk to invest.

MSD-88 : A Property of Maximal Subrings

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We prove a property of the maximal subrings of a ring. In particular, we discuss how the dimensions of a ring and its maximal subring are related to their conductor. An example is also given to strengthen the result.

MSD-89 : Recognition of Handwritten Hindi Characters Using Hybrid Feature Extraction Technique

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Automatic recognition of hand written characters is one of the most important application areas of pattern recognition field. The problem becomes more complex if characters are cursive in nature. Hindi characters are cursive in nature and show a lot of similarities in their structure. A lot of sincere efforts have been done to recognize Hindi characters; still accuracy and proficiency is expected. In this paper, performances of various neural network systems are measured for the recognition of handwritten Hindi characters. Hybrid feature extraction technique is applied to extract meaningful features of character images. A comparative analysis of performances of selected neural network models is also done. It has been analyzed that Radial basis function network and its variants give better results than other neural network models.

